Natural Heritage & Endangered Species Program
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Ski-tailed Emerald Dragonfly

Somatochlora elongata

State Status: **Special Concern**
Federal Status: None

DESCRIPTION: The Ski-tailed Emerald (*Somatochlora elongata*) is a large, slender insect of the order Odonata, suborder Anisoptera (the dragonflies), family Corduliidae (the emeralds). Most emeralds of the genus *Somatochlora* are large and dark with at least some iridescent green coloration, brilliant green eyes in the mature adults (brown in young individuals), and moderate pubescence (hairiness), especially on the thorax. The Ski-tailed Emerald is distinctive among the *Somatochlora* of Massachusetts in its thoracic markings which consist of an anterior stripe and a posterior spot on each side of the thorax. The thorax overall is of a bronzy brown color with metallic green highlights throughout. The face is yellow with two dark brown cross bands, with the forehead (frons) a shimmering metallic green. The large eyes, which meet at a seam on the top of the head, are brilliant green in mature adults. The long and slender abdomen is most narrow at the base, widening to segment 5 (dragonflies and damselflies have 10 abdominal segments) and then narrowing slightly towards the distal end. The abdomen is black with a metallic green luster. The wings of this species are transparent and, as in all dragonflies and damselflies supported by a dense system of dark veins.

Adult male Ski-tailed Emeralds range from 2 to 2.2 inches (52 to 56 mm) in length. Females measure 58 to 62 mm (inches) in length. Although the females tend to be larger, male and female Ski-tailed Emeralds are similar in coloration and body form.

SIMILAR SPECIES: Ski-tailed Emeralds can be easily distinguished from other species of the genus *Somatochlora* in Massachusetts by the distinct stripe and spot on each side of the thorax as described above. No other *Somatochlora* in Massachusetts shows these markings. The shape of the males terminal abdominal appendages (as shown in Walker and Corbet (1975) and Needham *et al.* (2000)) and the female's large triangle-shaped vulvar lamina (as shown in Walker and Corbet (1975) and Needham *et al.* (2000)) are the best way to definitively determine this and many species of dragonflies. A magnifying lens or microscope is needed to observe characters of these structures. Williamson's Emerald (*Somatochlora williamsoni*) is the species most similar to the Ski-tailed Emerald. Although it has the same body shape and general coloration, this species has two indistinct stripes (rather than a stripe and a spot) on each side of the thorax and distinctive terminal abdominal appendages and vulvar lamina (as shown in Walker and Corbet (1975) and Needham *et al.* (2000)).

The nymphs can be distinguished by characteristics of the tibia and femora and by the size and shape of the lateral spines on the abdomen as per the keys in Needham *et al.* (2000) and Soltesz (1996).

HABITAT: In Massachusetts, the Ski-tailed Emerald has been found inhabiting small to medium sized streams. Such streams may have a moderate or very sluggish flow and dense or little emergent vegetation. At several sites, Ski-tailed Emeralds have been found patrolling and ovipositing at the swelling of streams created in part by beaver dams. Elsewhere in its range, the Ski-tailed Emerald is said to occasionally inhabit highly vegetated ponds, though flowing waters appear to be a characteristic of normal Ski-tailed Emerald habitat.

LIFE-HISTORY/BEHAVIOR: This species flies throughout July and most of August.

SKI-TAILED EMERALD FLIGHT PERIOD

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

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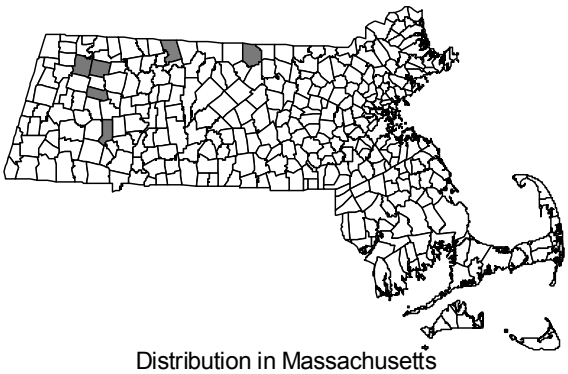
Although little has been published about the life cycle of the Ski-tailed Emerald in particular, information documented for other species is most likely applicable. Like damselflies, dragonflies have two distinct life stages. The first stage is an aquatic larval stage (nymph) and in the second stage the dragonfly is an active flying adult.

Dragonfly nymphs are voracious predators, feeding on just about any animal of appropriate size, including a wide variety of aquatic insects, small fish, and tadpoles. Nymphs undergo several molts until the final stage of development, the emergence from the nymph to adult stage. The nymph of the Ski-tailed Emerald crawls up onto emergent vegetation, exposed banks or even tree trunks that line the streams they inhabit to emerge. When the nymph reaches a secure substrate, the adult begins to push itself out of the exoskeleton, head and thorax first and then the abdomen. Immediately following emergence the adult is very compacted, especially the wings and abdomen. As soon as the abdomen and wings are fully expanded, the adult takes its first flight. This maiden flight usually carries the individuals up into surrounding forest or other areas away from water, where they spend several days maturing and feeding and are somewhat protected from predation and inclement weather. Ski-tailed Emeralds can be found in fields and forest clearings, which they patrol in search of small aerial insects, such as flies and mosquitoes, on which they feed. When not feeding, Ski-tailed Emeralds rest hanging vertically from the branches of bushes and trees. The adult coloration is acquired and the dragonfly becomes sexually mature before returning to the breeding habitat to initiate mating. Breeding in Massachusetts probably occurs from mid-July through August, as in other regions where this species occurs. Males patrol up and down the stream along the banks, usually no more than two feet above the surface of the water, in search of females. The joined pair quickly flies off into the surrounding upland habitat to mate.

Following mating, oviposition (egg laying) occurs. Females of the genus *Somatochlora* oviposit alone and deposit their eggs directly into the substrate by tapping the tip of the abdomen on its surface. Ski-tailed Emeralds have a fairly unusual method of oviposition. Females will cruise low and erratically around a small area near the bank of the stream, intermittently tapping the surface of the water and the surface of bank (which is often covered with mosses). They tap the bank and then the water, going back and forth continuously. The reasons for this type of oviposition are unclear, though some believe that the female is depositing her eggs in the bank of the stream and then going to the water to wash any debris that she might have picked up from the bank off her abdomen. In Massachusetts, females of the Ski-tailed Emerald have been seen ovipositing in the quiet recesses of backwashes, though elsewhere they have been found ovipositing in sections of rapids of streams.

RANGE: The Ski-tailed Emerald is distributed from the Maritime Provinces west to Ontario and south to Minnesota, Michigan, and Pennsylvania, and sparsely through Appalachian Mountains of North Carolina and Georgia. In New England, this species is found in Maine, New Hampshire, Vermont, and Massachusetts.



Distribution in Massachusetts
1977 - 2002
Based on records in Natural Heritage Database

POPULATION STATUS IN MASSACHUSETTS: The Ski-tailed Emerald is listed as a Species of Special Concern in Massachusetts. As with all species listed in Massachusetts, individuals of the species are protected from take (picking, collecting, killing, etc…) and sale under the Massachusetts Endangered Species Act. The species is known from several sites in western Massachusetts and can be quite numerous at some of these sites. Recent field work has shown this species to be relatively more common than previously believed, particularly in western portions of the state, and further work may turn up more sites where suitable habitat is available.

MANAGEMENT RECOMMENDATIONS: As for many rare species, exact needs for management of the Ski-tailed Emerald are not known. As an inhabitant of streams, Ski-tailed Emerald is vulnerable to habitat alteration such as damming and altering of flowage, along with many other aquatic impacts such as chemical pollution and salt run-off from roadways. Overuse of streams for recreation (fishing, swimming, etc.) could cause problems if left unchecked. Such activities should be monitored and controlled if necessary. Another important part of preserving this and other species of dragonflies is the maintenance of suitable upland habitat that is essential for the life cycle of Ski-tailed Emerald and other dragonflies. Dragonflies need natural uplands where they are protected and can mature and feed before returning to breed.

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